



General

Guideline Title

ACR Appropriateness Criteria® sinusitis — child.

Bibliographic Source(s)

Karmazyn B, Coley BD, Dempsey-Robertson ME, Dillman JR, Dory CE, Garber M, Hadley JA, Hayes LL, Keller MS, Meyer JS, Milla SS, Paidas C, Raske ME, Rigsby CK, Strouse PJ, Wootton-Gorges SL, Expert Panel on Pediatric Imaging. ACR Appropriateness Criteria® sinusitis - child. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 6 p. [54 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Karmazyn BK, Gunderman R, Coley BD, Bulas D, Fordham L, Meyer JS, Paidas C, Podberesky DJ, Prince JS, Rodriguez W, Expert Panel on Pediatric Imaging. ACR Appropriateness Criteria® sinusitis - child. [online publication]. Reston (VA): American College of Radiology (ACR); 2009. 5 p.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- [December 14, 2016 – General anesthetic and sedation drugs](#) : The U.S. Food and Drug Administration (FDA) is warning that repeated or lengthy use of general anesthetic and sedation drugs during surgeries or procedures in children younger than 3 years or in pregnant women during their third trimester may affect the development of children's brains. Consistent with animal studies, recent human studies suggest that a single, relatively short exposure to general anesthetic and sedation drugs in infants or toddlers is unlikely to have negative effects on behavior or learning. However, further research is needed to fully characterize how early life anesthetic exposure affects children's brain development.

Recommendations

Major Recommendations

ACR Appropriateness Criteria®

Clinical Condition: Sinusitis – Child

Variant 1: Children with uncomplicated acute sinusitis.

Radiologic Procedure	Rating	Comments	RRL*
X-ray paranasal sinuses	1	One to four projections. See text.	☢
CT paranasal sinuses without contrast	1		☢☢☢
CT paranasal sinuses with contrast	1		☢☢☢
CT paranasal sinuses without and with contrast	1		☢☢☢☢
MRI paranasal sinuses without contrast	1		O
MRI paranasal sinuses without and with contrast	1		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Children with persistent (acute sinusitis that does not respond to treatment), recurrent, or chronic sinusitis.

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without contrast	9		☢☢☢
CT paranasal sinuses with contrast	3		☢☢☢
MRI paranasal sinuses without contrast	3		O
MRI paranasal sinuses without and with contrast	3		O
CT paranasal sinuses without and with contrast	2	High-density area in noncontrast CT may be helpful in diagnosis of sinusitis due to aspergillosis.	☢☢☢☢
X-ray paranasal sinuses	1	One to four projections. See text.	☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Children with sinusitis with orbital or intracranial complications.

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses with contrast	9		☢☢☢
CT head with contrast	9	Should be done selectively when signs suggest intracranial complication.	☢☢☢
MRI paranasal sinuses without and with contrast	7	See statement regarding contrast in text under "Anticipated Exceptions."	O
MRI head without and with contrast	7	Should be performed when signs suggest intracranial complications that are not demonstrated by initial CT scan. See statement regarding contrast in text under "Anticipated Exceptions."	O
MRI paranasal sinuses without contrast	3		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Radiologic Procedure	Rating	Comments	RRL*
		complications that are not demonstrated by initial CT scan.	
CT paranasal sinuses without and with contrast	2	High-density area in noncontrast CT may be helpful in diagnosis of sinusitis due to aspergillosis.	☼☼☼☼
CT head without and with contrast	2	Should be done selectively when signs suggest intracranial complication.	☼☼☼☼
CT paranasal sinuses without contrast	1		☼☼☼☼
CT head without contrast	1	Should be done selectively when signs suggest intracranial complication.	☼☼☼☼
X-ray paranasal sinuses	1	One to four projections. See text.	☼
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Summary of Literature Review

Sinusitis is defined as inflammation of the paranasal sinuses. It is common in the pediatric population and often causes morbidity but rarely results in serious complications. The most common predisposing factor for acute bacterial sinusitis is viral upper respiratory infection that involves the nose and paranasal sinuses. It is estimated that bacterial sinusitis develops in 5% to 13% of viral upper respiratory infections in young children. The second most important predisposing factor for bacterial sinusitis is allergic rhinitis. Other underlying factors that may lead to sinusitis in children include nasal airway obstruction, immunodeficiencies, ciliary dysfunction, and cystic fibrosis. The growing number of children in day care centers has led to an increase in upper respiratory infections, which usually precede acute sinusitis.

The gold standard for diagnosis of bacterial sinusitis is recovery of high-density bacteria ($\geq 10^4$ colony-forming units/mL) from sinus aspirate. However, this method is not feasible for the primary care practitioner and is invasive, time consuming, and potentially painful. Therefore, the diagnosis of bacterial sinusitis is most commonly based on clinical criteria.

Acute Sinusitis

The American Academy of Pediatrics (AAP) defines acute bacterial sinusitis as bacterial sinusitis that lasts <30 days and whose symptoms resolve completely. A common symptom of acute sinusitis is upper respiratory infection with purulent nasal drainage. Severe acute bacterial sinusitis is associated with high fever and headache that is typically above or behind the eyes. The differentiation between viral and bacterial sinusitis and the decision about whether to treat with antibiotics may be difficult. Adjuvant treatment may include saline nasal irrigation, antihistamines, decongestants, mucolytic agents, and topical intranasal steroids.

Routine imaging of the paranasal sinuses in children with acute bacterial sinusitis without complications is not recommended. It is not useful for differentiating between viral and bacterial sinusitis and usually does not change management in uncomplicated acute sinusitis. A high incidence of soft-tissue findings is noted on radiographs, computed tomography (CT), and magnetic resonance imaging (MRI) in patients who have no clinical evidence of sinus disease but have undergone these examinations for other reasons. Incidences of 33% to 50% have been reported. In most adults, the common cold acutely produces mucosal abnormalities in sinuses, including the ostiomeatal area and nasal passageways. This incidence is even higher in infants and children and was 97% in a study involving infants who had a cold in the 2 weeks preceding cranial CT done for other reasons. MRI studies have also shown that soft-tissue changes in sinuses can last months following an acute infection. Clinical correlation is critical for evaluating the significance of the imaging findings. In addition, most children with clinical diagnosis of acute sinusitis will have radiographic abnormalities correlating with sinusitis and therefore their management will not change.

Persistent, Recurrent, or Chronic Sinusitis

The AAP defines subacute bacterial sinusitis as bacterial sinusitis that lasts between 30 and 90 days and whose symptoms resolve completely. Recurrent acute bacterial sinusitis is defined by episodes lasting less than 30 days each and separated by intervals of at least 10 asymptomatic days. Chronic sinusitis lasts more than 90 days, and patients have persistent residual respiratory symptoms such as cough, rhinorrhea, or nasal obstruction. In patients with recurrent or chronic sinusitis, one must consider the possibility that they are associated with or secondary to asthma, gastroesophageal reflux, cystic fibrosis, or allergic rhinitis. Common symptoms of chronic sinusitis are protracted nasal secretions that may be purulent or mucoid. Drainage tends to be from the posterior nasopharynx, causing frequent cough and urge to clear the throat. Other symptoms

may include chronic headache and intermittent fever. Young children may have malodorous breath. The most serious complication of chronic sinusitis is extension of infection into the cranium. Chronic or recurrent sinusitis is mainly treated medically; however, in cases that do not respond to treatment, surgery may be required. Fungal sinusitis is unusual in children and has variable clinical and imaging findings. This condition is beyond the scope of this guideline.

Orbital and Intracranial Complications of Sinusitis

Orbital and intracranial complications of sinusitis are uncommon but may cause significant morbidity and mortality. The orbit is prone to spread of infection through the lamina papyracea, a thin bone that separates the medial orbital wall from the ethmoid sinuses. Medial wall periosteal abscess is the most common complication. Periorbital cellulitis and ocular findings (abnormal visual examination, ophthalmoplegia, or proptosis) are common at presentation.

Intracranial complications most commonly result from extension of frontal sinusitis. Intracranial spread of infection is likely through progression of septic thrombi or transmission of septic emboli through valveless diploic veins of the skull base that penetrate the dura. A less common route is through direct extension of osteomyelitis. Symptoms at presentation that suggest intracranial complications include Pott's puffy tumor, altered consciousness, seizures, hemiparesis, and cranial nerve palsy. Complications include meningitis, encephalitis, epidural and subdural suppuration, orbital abscess, and, less commonly, brain abscess and dural sinus thrombophlebitis.

Treatment includes intravenous antibiotics and surgical intervention to drain the affected sinuses and orbital or intracranial abscesses.

Radiography

The radiograph series for evaluation of the paranasal sinuses traditionally includes up to four views (Caldwell, Waters, submentovertex, and lateral). This series of radiographs is difficult to perform in young children. As compared with CT scan, radiographs of the paranasal sinuses are less costly and more widely available. However, radiographs are limited in the evaluation of the paranasal sinuses because they cannot localize the pathology well and cannot evaluate the ostiomeatal complex. In addition, radiographs both underdiagnose and overdiagnose soft-tissue changes in the paranasal sinuses as compared to CT scan. Some have suggested using only the Waters view radiograph. However, it was shown to have 32% false negative and 49.2% false positive using CT scan as the gold standard. In addition, most of the abnormalities in the ethmoidal and sphenoidal sinus were not detected in the Waters radiograph.

Computed Tomography

CT scans are the gold standard study guiding management of sinusitis because they accurately depict the sinus anatomy, including soft-tissue changes, anatomic variations, the ostiomeatal complex, and complications, especially those involving the orbit or intracranial structures. With the advent of multidetector CT scan volume isometric imaging, it is possible to obtain axial images and reconstruct the coronal planes. This is especially advantageous in young children who may not be able to cooperate for direct coronal CT study of the paranasal sinuses. In addition, radiation of the orbits may be avoided. Low-dose CT scan of the paranasal sinuses has doses comparable to those of two radiographic views of the paranasal sinuses. CT is the study of choice in children with recurrent or chronic sinusitis before functional endoscopic sinus surgery (FESS), as it provides a road map for surgery. However, severity of preoperative CT findings does not correlate with severity of symptoms, and CT does not predict symptomatic relief after FESS.

If suspicion exists for complications of sinusitis — such as preseptal or postseptal cellulitis, subperiosteal abscess, orbital cellulitis or abscess, cavernous sinus thrombosis, osteomyelitis of the frontal bone, subdural empyema, epidural or brain abscess, meningitis, brain infarction, or mycotic aneurysm — then intravenous contrast CT, including the brain and sinuses, is indicated.

Magnetic Resonance Imaging

MRI of the paranasal sinuses has several potential advantages; it can well identify mucosal thickening and differentiate mucosal thickening from sinus secretions, and it is not associated with ionizing radiation. MRI is valuable in diagnosing complications of sinusitis that extend to the cranium or orbits and is more sensitive than contrast CT in detecting intracranial complications such as meningeal enhancement and fluid collections. In a study involving adult and pediatric patients, MRI was found to be more accurate than CT (97% versus 87%) and clinical findings (82%) in diagnosing meningitis. Other studies in children showed that MRI was more sensitive than contrast CT (93% versus 63%) in detecting cranial complications. However, it does not demonstrate bony detail of the ostiomeatal complex well and is less sensitive for bony erosions. In addition, it has limited availability and higher costs compared to CT and frequent need for sedation in infants and children. Therefore, MRI of the sinuses should not be the primary imaging for evaluation of sinusitis in children.

Summary

- The diagnosis of sinusitis should be made clinically, not on the basis of imaging findings alone.

- No imaging studies are indicated for uncomplicated acute sinusitis.
- CT of the paranasal sinuses is the imaging modality of choice in patients with persistent, recurrent, or chronic sinusitis.
- Cranial/orbit CT with contrast, to include the sinuses, is indicated for suspected orbital or intracranial complications of sinusitis
- MRI, while not as good as CT for depicting bone details, is more sensitive for evaluating intracranial complications that are not demonstrated on an initial CT scan.

Anticipated Exceptions

Nephrogenic systemic fibrosis (NSF) is a disorder with a scleroderma-like presentation and a spectrum of manifestations that can range from limited clinical sequelae to fatality. It appears to be related to both underlying severe renal dysfunction and the administration of gadolinium-based contrast agents. It has occurred primarily in patients on dialysis, rarely in patients with very limited glomerular filtration rate (GFR) (i.e., <30 mL/min/1.73 m²), and almost never in other patients. There is growing literature regarding NSF. Although some controversy and lack of clarity remain, there is a consensus that it is advisable to avoid all gadolinium-based contrast agents in dialysis-dependent patients unless the possible benefits clearly outweigh the risk, and to limit the type and amount in patients with estimated GFR rates <30 mL/min/1.73 m². For more information, please see the American College of Radiology (ACR) Manual on Contrast Media (see the "Availability of Companion Documents" field).

Abbreviations

- CT, computed tomography
- MRI, magnetic resonance imaging

Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
O	0 mSv	0 mSv
☼	<0.1 mSv	<0.03 mSv
☼ ☼	0.1-1 mSv	0.03-0.3 mSv
☼ ☼ ☼	1-10 mSv	0.3-3 mSv
☼ ☼ ☼ ☼	10-30 mSv	3-10 mSv
☼ ☼ ☼ ☼ ☼	30-100 mSv	10-30 mSv

*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "Varies."

Clinical Algorithm(s)

Algorithms were not developed from criteria guidelines.

Scope

Disease/Condition(s)

Sinusitis

- Acute
- Persistent
- Recurrent
- Chronic

Guideline Category

Diagnosis

Evaluation

Clinical Specialty

Allergy and Immunology

Family Practice

Infectious Diseases

Otolaryngology

Pediatrics

Radiology

Intended Users

Health Plans

Hospitals

Managed Care Organizations

Physicians

Utilization Management

Guideline Objective(s)

To evaluate the appropriateness of initial radiologic examinations for sinusitis in the pediatric population

Target Population

Children with sinusitis

Interventions and Practices Considered

1. X-ray paranasal sinuses
2. Computed tomography (CT)
 - Paranasal sinuses without contrast
 - Paranasal sinuses with contrast
 - Paranasal sinuses without and with contrast
 - Head without contrast
 - Head with contrast
 - Head without and with contrast
3. Magnetic resonance imaging (MRI)
 - Paranasal sinuses without contrast
 - Paranasal sinuses without and with contrast
 - Head without contrast
 - Head without and with contrast

Major Outcomes Considered

Utility of radiologic examinations in differential diagnosis

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search Procedure

The Medline literature search is based on keywords provided by the topic author. The two general classes of keywords are those related to the condition (e.g., ankle pain, fever) and those that describe the diagnostic or therapeutic intervention of interest (e.g., mammography, MRI).

The search terms and parameters are manipulated to produce the most relevant, current evidence to address the American College of Radiology Appropriateness Criteria (ACR AC) topic being reviewed or developed. Combining the clinical conditions and diagnostic modalities or therapeutic procedures narrows the search to be relevant to the topic. Exploding the term "diagnostic imaging" captures relevant results for diagnostic topics.

The following criteria/limits are used in the searches.

1. Articles that have abstracts available and are concerned with humans.
2. Restrict the search to the year prior to the last topic update or in some cases the author of the topic may specify which year range to use in the search. For new topics, the year range is restricted to the last 5 years unless the topic author provides other instructions.
3. May restrict the search to Adults only or Pediatrics only.
4. Articles consisting of only summaries or case reports are often excluded from final results.

The search strategy may be revised to improve the output as needed.

Number of Source Documents

The total number of source documents identified as the result of the literature search is not known.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Strength of Evidence Key

Category 1 - The conclusions of the study are valid and strongly supported by study design, analysis, and results.

Category 2 - The conclusions of the study are likely valid, but study design does not permit certainty.

Category 3 - The conclusions of the study may be valid but the evidence supporting the conclusions is inconclusive or equivocal.

Category 4 - The conclusions of the study may not be valid because the evidence may not be reliable given the study design or analysis.

Methods Used to Analyze the Evidence

Description of the Methods Used to Analyze the Evidence

The topic author drafts or revises the narrative text summarizing the evidence found in the literature. American College of Radiology (ACR) staff draft an evidence table based on the analysis of the selected literature. These tables rate the strength of the evidence for all articles included in the narrative text.

The expert panel reviews the narrative text, evidence table, and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the table. Each individual panel member forms his/her own opinion based on his/her interpretation of the available evidence.

More information about the evidence table development process can be found in the ACR Appropriateness Criteria® Evidence Table Development document (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Modified Delphi Technique

The appropriateness ratings for each of the procedures included in the Appropriateness Criteria topics are determined using a modified Delphi methodology. A series of surveys are conducted to elicit each panelist's expert interpretation of the evidence, based on the available data, regarding the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario. American College of Radiology (ACR) staff distributes surveys to the panelists along with the evidence table and narrative. Each panelist interprets the available evidence and rates each procedure. The surveys are completed by panelists without consulting other panelists. The ratings are a scale between 1 and 9, which is further divided into three categories: 1, 2, or 3 is defined as "usually not appropriate"; 4, 5, or 6 is defined as "may be appropriate"; and 7, 8, or 9 is defined as "usually appropriate." Each panel member assigns one rating for each procedure per survey round. The surveys are collected and the results are tabulated, de-identified and redistributed after each round. A maximum of three rounds are conducted. The modified Delphi technique enables each panelist to express individual interpretations of the evidence and his or her expert opinion without excessive bias from fellow panelists in a simple, standardized and economical process.

Consensus among the panel members must be achieved to determine the final rating for each procedure. Consensus is defined as eighty percent (80%) agreement within a rating category. The final rating is determined by the median of all the ratings once consensus has been reached. Up to three rating rounds are conducted to achieve consensus.

If consensus is not reached, the panel is convened by conference call. The strengths and weaknesses of each imaging procedure that has not reached consensus are discussed and a final rating is proposed. If the panelists on the call agree, the rating is accepted as the panel's consensus. The document is circulated to all the panelists to make the final determination. If consensus cannot be reached on the call or when the document is circulated, "No consensus" appears in the rating column and the reasons for this decision are added to the comment sections.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Description of Method of Guideline Validation

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The recommendations are based on analysis of the current literature and expert panel consensus.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Selection of appropriate radiologic imaging procedures for diagnosis of sinusitis in the pediatric population

Potential Harms

- *Radiography*: The radiograph series for evaluation of the paranasal sinuses traditionally includes up to four views (Caldwell, Waters, submentovertex, and lateral). This series of radiographs is difficult to perform in young children. As compared with CT scan, radiographs are limited in the evaluation of the paranasal sinuses because they cannot localize the pathology well and cannot evaluate the osteomeatal complex. In addition, radiographs both underdiagnose and overdiagnose soft-tissue changes in the paranasal sinuses as compared to CT scan. In addition, in one study, most of the abnormalities in the ethmoidal and sphenoidal sinus were not detected in the Waters radiograph.
- *Magnetic Resonance Imaging (MRI)*: MRI does not demonstrate bony detail of the osteomeatal complex well and is less sensitive for bony erosions. In addition, it has limited availability and higher costs compared to CT and frequently requires sedation in infants and children.

Gadolinium-based Contrast Agents

Nephrogenic systemic fibrosis (NSF) is a disorder with a scleroderma-like presentation and a spectrum of manifestations that can range from limited clinical sequelae to fatality. It appears to be related to both underlying severe renal dysfunction and the administration of gadolinium-based contrast agents. It has occurred primarily in patients on dialysis, rarely in patients with very limited glomerular filtration rate (GFR) (i.e., <30 mL/min/1.73 m²), and almost never in other patients. Although some controversy and lack of clarity remain, there is a consensus that it is advisable to avoid all gadolinium-based contrast agents in dialysis-dependent patients unless the possible benefits clearly outweigh the risk, and to limit the type and amount in patients with estimated GFR rates <30 mL/min/1.73 m². For more information, please see the American College of Radiology (ACR) Manual on Contrast Media (see the "Availability of Companion Documents" field).

Relative Radiation Level (RRL)

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, both because of organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared to those specified for adults. Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® Radiation Dose Assessment Introduction document (see the "Availability of Companion Documents" field).

Qualifying Statements

Qualifying Statements

The American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Karmazyn B, Coley BD, Dempsey-Robertson ME, Dillman JR, Dory CE, Garber M, Hadley JA, Hayes LL, Keller MS, Meyer JS, Milla SS, Paidas C, Raske ME, Rigsby CK, Strouse PJ, Wootton-Gorges SL, Expert Panel on Pediatric Imaging. ACR Appropriateness Criteria® sinusitis - child. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 6 p. [54 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1995 (revised 2012)

Guideline Developer(s)

American College of Radiology - Medical Specialty Society

Source(s) of Funding

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

Guideline Committee

Committee on Appropriateness Criteria, Expert Panel on Pediatric Imaging

Composition of Group That Authored the Guideline

Panel Members: Boaz Karmazyn, MD (*Principal Author and Panel Vice-chair*); Brian D. Coley, MD (*Panel Chair*); Molly E. Dempsey-Robertson, MD; Jonathan R. Dillman, MD; Christopher E. Dory, MD; Matthew Garber, MD; James A. Hadley, MD; Laura L. Hayes, MD; Marc S. Keller, MD; James S. Meyer, MD; Sarah S. Milla, MD; Charles Paidas, MD; Molly E. Raske, MD; Cynthia K. Rigsby, MD; Peter J. Strouse, MD; Sandra L. Wootton-Gorges, MD

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Karmazyn BK, Gunderman R, Coley BD, Bulas D, Fordham L, Meyer JS, Paidas C, Podberesky DJ, Prince JS, Rodriguez W, Expert Panel on Pediatric Imaging. ACR Appropriateness Criteria® sinusitis - child. [online publication]. Reston (VA): American College of Radiology (ACR); 2009. 5 p.

Guideline Availability

Electronic copies: Available from the [American College of Radiology \(ACR\) Web site](#) .

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

Availability of Companion Documents

The following are available:

- ACR Appropriateness Criteria®. Overview. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the [American College of Radiology \(ACR\) Web site](#) .
- ACR Appropriateness Criteria®. Literature search process. Reston (VA): American College of Radiology; 1 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Evidence table development – diagnostic studies. Reston (VA): American College of Radiology; 2013

Nov. 3 p. Electronic copies: Available in PDF from the [ACR Web site](#) .

- ACR Appropriateness Criteria®. Radiation dose assessment introduction. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Manual on contrast media. Reston (VA): American College of Radiology; 90 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Procedure information. Reston (VA): American College of Radiology; 1 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria® sinusitis — child. Evidence table. Reston (VA): American College of Radiology; 2012. 11 p. Electronic copies: Available from the [ACR Web site](#) .

Patient Resources

None available

NGC Status

This summary was completed by ECRI on March 25, 1999. The information was verified by the guideline developer on September 9, 1999. The summary was updated on February 12, 2002. The information was verified again by the guideline developer on March 25, 2002. This summary was updated by ECRI on August 17, 2006. This summary was updated by ECRI Institute on May 17, 2007 following the U.S. Food and Drug Administration (FDA) advisory on Gadolinium-based contrast agents. This summary was updated by ECRI Institute on June 20, 2007 following the U.S. Food and Drug Administration (FDA) advisory on gadolinium-based contrast agents. This summary was updated by ECRI Institute on May 24, 2010. This summary was updated by ECRI Institute on January 13, 2011 following the U.S. Food and Drug Administration (FDA) advisory on gadolinium-based contrast agents. This NGC summary was updated by ECRI Institute on October 12, 2012. This summary was updated by ECRI Institute on February 15, 2017 following the U.S. Food and Drug Administration advisory on general anesthetic and sedation drugs.

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